



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE SENSE OF RHYTHM AS A MUSICAL TALENT

By CARL E. SEASHORE

THERE are two fundamental factors in the perception of rhythm: an instinctive tendency to group impressions in hearing, and a capacity for doing this with precision in time and stress. The subjective tendency is so deeply ingrained, on account of its biological service, that we irresistibly group uniform successions of sound, such as the tick of the clock, into rhythmic measure. The supposed limping of a clock is often purely subjective. This is called subjective rhythm to distinguish it from objective rhythm, in which the grouping is actually marked, as in music and poetry. If a long series of quarter-notes were played with absolute uniformity in time and stress, the listener would inevitably hear them divided into measures and would actually hear the appropriate notes accented. Such is one of nature's beneficent illusions

A good illustration of this is found in a very crude way when one is lying in a Pullman sleeper and the successive beats from the crossing rail joints set up a time which carries tunes that come into one's head. The rails seem, as it were, to beat the time emphatically into measures. The writer recalls once being haunted by the plantation melody, "What kind o' a crown you gwine to wear? Golden crown?" As he allowed the imagery of the melody to flow, the accentuation of the click of the rails became very prominent and satisfying as rhythm. One who is trained in observing himself may observe this tendency toward rhythmic grouping in any or all his activities. Take, *e. g.*, the homely act of eating. One who has a highly developed sense of rhythm may, even in eating soup, feel the various movements divided into measures with their artistic grouping of long interval and short interval, some objectively and others only subjectively marked with occasional cadences; yet a person watching the movement might not be able to see any rhythm in the actual movements.

The objective rhythm as we find it ordinarily in prose and poetry is marked by emphasis of time or intensity, or both. Occasionally it may be also through pitch, although that always

involves intensity. It is also probable that it may come through other senses than hearing.

Subjective rhythm is more fundamental than objective rhythm and always plays a large rôle in the objective. This is why we find rhythm more essentially a matter of personality than a matter of objective grouping. All rhythm is primarily a projection of personality. The rhythm is what I am. For him who is not endowed with this talent the objective rhythms in nature and art are largely wasted.

While the perception of rhythm involves the whole organism, it requires primarily five fundamental capacities. The first two of these are the sense of time and the sense of intensity, corresponding respectively to the two attributes of sound, which constitute the sensory media of rhythm. The third and fourth are auditory imagery and motor imagery, *i. e.*, the capacity for reviving vividly in representation the auditory experience and the motor attitudes respectively. The fifth is a motor impulse for rhythm, an instinctive tendency, chiefly unconscious and largely organic. These five factors may be said to be basic to the sense of rhythm. Other general factors, such as emotional type and temperament, logical span, or creative imagination, are intimately woven into the warp and woof of rhythm, but we shall probably find that these are secondary to the primary and basic forces named.

We may now define the sense of rhythm as an instinctive disposition to group recurrent sense impressions vividly and with precision, by time or intensity, or both, in such a way as to derive pleasure and efficiency through the grouping.

The sense of rhythm, or perception of rhythm, as thus defined, is to be distinguished from rhythmic action, an important aspect with which we are not here concerned; yet it is a complex process and involves literally the whole organism in the form of a perpetual attitude of responsiveness to measured intervals of time or tone.

To gain some insight into the actual nature of rhythm it may be well to point out some of the things that rhythm does on the side of perception as distinguished from action, which will be equivalent to pointing out the sources of pleasure and means to efficiency in rhythm.

First.—Rhythm favors perception by grouping. It has been demonstrated that, under happy grouping, one can remember approximately as many small groups as one can remember individual objects without grouping; *e. g.*, in listening to a series of notes, one can grasp nearly as many measures if they are heard

rhythmically as one could grasp individual sounds if they were not heard rhythmically. This is a principle which is involved in all auditory perception. Individual sounds are grouped in measures and phrases, phrases and periods, periods and movements. The ability to grasp in terms of larger and larger units is a condition for achievement. The development of this ability results in power to handle vast numbers of sounds with ease, and this success is a source of pleasure. And that is true not only in poetry and in music but in our natural hearing, even under primitive conditions. Thus, rhythm has become a biological principle of efficiency, a condition for advance and achievement and a perpetual source of satisfaction. The rhythm need not be conspicuous to be effective.

Second.—Rhythm adjusts the strain of attention. In poetry and music, for instance, the rhythm enables us to anticipate the magnitude of units which are to be grasped. This in turn makes it possible to adjust the effort in such a way as to grasp the unit at the strategic moment and to relax the strain for a moment between periods. Of this, again, we may not be immediately conscious, but it may be readily demonstrated by experiment, as *e. g.*, if we should break up a measure as in going from $\frac{2}{4}$ to $\frac{3}{4}$ time without warning.

Genetically, the ordinary measure in poetry and music is determined by what is known as the attention wave. Our attention is periodic. All our mental life works rhythmically, that is, by periodic pulsation of effort or achievement with unnoticed intermittence of blanks. This is most easily observed in an elemental process such as hearing-ability. To demonstrate it in a simple way, proceed as follows: hold a watch a distance from the ear and then move it toward the ear till you can just hear it, and then keep it in this position for two or three minutes and observe that you hear it only intermittently. To check this, raise your finger when you hear the sound and lower your finger when you do not hear it. Do not be influenced by any theory, but act with the keenest decision for every second. You will then find that the hearing and silence periods alternate with fair regularity, the periods varying from two to eight or ten seconds in the extreme. This periodicity is primarily a periodicity of attention and reaches out into all our mental processes, being one of nature's contrivances in the interest of the conservation of nervous energy.

This is a principle which is made use of in nature and in industry, as, *e. g.*, in our lighting current. The current which

energizes our lamps is not, as a rule, a steady, direct current, but is "alternating." That is, it comes in pulsations, usually about sixty a second, which is frequent enough to give us the impression of continuous illumination. The rhythmic measure, then, is simply taking advantage of nature's supply of pulsating efforts of attention. And when the measure fits the attention wave it gives us a restful feeling of satisfaction and ease. This in turn results in what is known as secondary passive attention, which is a more economical and efficient form of attention than voluntary attention. Thus it comes about that we acquire a feeling of ease, power, and adjustment when we listen to rhythmic measures because we get the largest returns for the least outlay, and the tendency to seek this assumes biological importance because it tends to preserve and enhance life.

Third.—Rhythm gives us a feeling of balance. It is built on symmetry and when this symmetry involves within itself a certain element of flexibility which is well proportioned we have grace. Thus, when we read an ordinary prose sentence, we pay no attention to the structural form; but, when we scan the dactylic hexameter, we fall into the artistic mood, distinctly conscious of a symmetry and beauty in form, and in this sense rhythm becomes a thing in itself. Poetry may contain ideas and music may represent sentiment; but the rhythmic structure is in itself an object of art, and the placid perception of this artistic structure takes the form of the feeling of balance under various degrees of delicate support. Children sense the rhythm of poetry before they do the meaning.

Fourth.—The sense of rhythm gives us a feeling of freedom, luxury, and expanse. It gives us a feeling of achievement in moulding or creating. It gives us a feeling of rounding out a design. This sense of freedom is in one respect the commonplace awareness of the fact that one is free to miss the consciousness of periodicity in countless ways, yet chooses to be in the active and aggressive attitude of achievement. As, when the eye scans the delicate tracery in the repeated pattern near the base of the cathedral and then sweeps upward and delineates the harmonious design continued in measures gradually tapering off into the towering spire, all one unit of beauty expressing the will and imagination of the architect; so in music, when the ear grasps the intricate rhythms of beautiful music and follows it from the ground-work up through the delicate tracery into towering climaxes in clustered pinnacles of rhythmic tone figures, we feel as though we did this all because we wished to, because we craved it, because we were free to do it, because we were able to do it.

Fifth.—Rhythm gives us a feeling of power; it carries. It is like a dream of flying; it is so easy to soar. One feels as if he could lift himself by his boot-straps. The pattern once grasped, there is an assurance of ability to cope with the future. This results in the disregard of the ear element and results in a motor attitude, or a projection of the self in action; for rhythm is never rhythm unless one feels that he himself is acting it, or, what may seem contradictory, that he is even carried by his own action.

Sixth.—It stimulates and lulls, contradictory as it may seem. Pronounced rhythm brings on a feeling of elation which not infrequently results in a mild form of ecstasy or absentmindedness, a loss of consciousness of the environment. It excites and it makes us insensible to the excitation, giving the feeling of being lulled. This is well illustrated in the case of dancing. Seated in comfort and enjoyment in pleasant conversation, the striking up of a waltz is a call which excites to action. It starts the organic, rhythmic movements of the body the moment it is heard and one is drawn, as it were, enticingly into the conventional movements of the dance. But no sooner is this done, in the true enjoyment of the dance, than one becomes oblivious to intellectual pursuits, launches himself, as it were, upon the carrying measures, feels the satisfaction of congenial partnership, graceful step, freedom of movement—action without any object other than the pleasure in the action itself. There comes a sort of auto-intoxication from the stimulating effect of the music and the successful self-expression in balanced movements sustained by that music and its associations.

The same is true of the march. When the march is struck up it stimulates tension of every muscle of the body. The soldier straightens up, takes a firmer step, observes more keenly, and is all attention; but as he gets into the march, all this passes into its opposite, a state of passivity, obliviousness to environment, and obliviousness to effort and action. The marked time and accent of the band music swings the movements of all parts of the body into happy adjustment. He can march farther in better form, and with less fatigue.

Seventh.—Rhythmic periodicity is instinctive. As we saw above, the grouping into natural periods of the flow of attention is a biological principle of preservative value. It is likewise true that the tendency to act in rhythmic movements is of biological value, and for a similar reason. If one does not know where to put his hand or foot the next movement, he is ill at ease and will be inefficient in the movement; but if movements may be foreseen

and even forefelt, and an accompanying signal sets off the movement without conscious effort, there results a greatly lessened expenditure of energy, a more effective action, a feeling of satisfaction. Anything that accomplishes these ends in the life of a species will tend to become instinctive, to develop a natural tendency always to move in rhythmic measure; and, when our movements are not actually divided into objective periodicity, we tend to fall into a subjective rhythm. We cannot have adequate perception of rhythm without this motor setting. The bearing of this instinctive motor tendency on the perception of rhythm lies in the fact that, with the motor instinct goes an instinct to be in a receptive attitude for the perception of such rhythms, both subjective and objective.

Eighth.—Rhythm finds resonance in the whole organism. It is not a matter of the ear or the finger only; it is a matter of the two fundamental powers of life; namely, knowing and acting. And, therefore, indirectly it affects the circulation, respiration, and all the secretions of the body in such a way as to arouse agreeable feeling. Herein we find the groundwork of emotion; for rhythm, whether in perception or action, is emotional when highly developed, and results in response of the whole organism to its pulsations. Such organic pulsations and secretions are the physical counterpart of emotion. Thus, when we listen to the dashing billows or the trickling rain drops, when we see the swaying of the trees in the wind, the waving of the wheat fields, we respond to these, we feel ourselves into them, and there is rhythm everywhere, not only in every plastic part of our body, but in the world as we know it at that moment.

Ninth.—Rhythm arouses sustained and enriching association. One need not tramp through the woods where the Wagnerian scenes are laid in order to experience the rich flow of visual association with a rhythmic flow of the music in *Lohengrin*. In most persons it comes irresistibly through free imagination. Our consciousness of pleasure in music is often a consciousness of seeing and doing things rather than a consciousness of hearing rhythm, the tendency being to project ourselves through the sensory cue of hearing into the more uncommon fields of vision and action.

Tenth.—Rhythm reaches out in extraordinary detail and complexity with progressive mastery. It makes use of novelty. The simple rhythms soon become monotonous, but one can find endless opportunity for enrichment by the complications of which the measure, the phrase, or the more attenuated rhythmic unit is

capable. This is true both for perception and for action. A rhythmic nature tends to live more and more in the exquisite refinements and far reaching ramifications of rhythmic perceptions and rhythmic feelings of movements, real or imagined. This power to radiate and encompass may be vastly enhanced by training in the rhythmic arts.

The sense of rhythm is like the instinct of curiosity: it takes one into wonders after wonders. Curiosity asks one question of nature and nature asks her ten. One degree of rhythmic perception acquired becomes a vantage ground from which we may approach higher levels, and each of these in turn traversed leads to higher vantage grounds, level after level, vista after vista.

Eleventh.—The instinctive craving for the experience of rhythm results in play, which is the free self-expression for the pleasure of expression; or, as Ruskin puts it, “an exertion of body and mind, made to please ourselves, and with no determined end.” It makes us play, young and old. It determines the form of play, in large part. Through play it leads to self-realization by serving as an ever present incentive for practice. In music and poetry we play with rhythm, as it were, and thereby develop it in expansive and artistic forms.

This inventory of the sources of pleasure in rhythm is fragmentary and inadequate, but it should at least accomplish two ends. It should dispel the notion that the perception of rhythm is a simple mental process or action, and should make us realize that to the person who is endowed with this gift in a high degree, it is one of the great sources of pleasure, not only in music and art, but in the commonplace of humdrum life. To a person who is not so endowed, this rôle of rhythm may be no more concretely patent than the ever-presence of color is to the color blind.

That enormous individual differences in this endowment obtain is a noted, if not notorious, fact. There are three ways of approaching the problem of concrete analysis or measurement for the purpose of securing reliable information about the relative presence or absence of this talent.

First, the capacity for rhythm rests upon certain fundamental powers which can be measured serviceably in various forms by methods now being introduced through experimental psychology. Of these we have the measure of the sense of time and the measure of the sense of intensity. These two are measures of capacity for precision in the perception of rhythm. Auditory

imagery and motor imagery may also be measured serviceably.¹ These two are measures of the capacity for realistic vividness, one of the flow of sound, the other of the motor response to that sound in the perception of rhythm. While we have no precise measure of the motor impulse, which is the motive power in the perception of rhythm, there are adequate means of rating it. These five measures of basic capacity, taken together, constitute a fair index to the degree and type of rhythmic sense present.

Second, there are a number of tests which measure actual precision in the perception of rhythm. Thus we may measure the ability to detect deviation from a given rhythmic measure. Similar tests may be made for the attribute of intensity; but it must be remembered that these tests are merely measures of precision and not measures of the richness of rhythmic experience.

The methods for the measure of auditory and motor imagery may also be extended in such a way as to give us tests for the capacity for vividness, stability, and fullness of the rhythmic representation in actual rhythmic setting. For experimental purposes many of these measures are serviceable, and may be very valuable; but, for the discovery of individual differences in guidance, they probably take us too far into detail, unless we are to make a very exhaustive analysis.

Third, a musician, who knows his own capacities in rhythm, ranks high in sensitiveness to rhythm, and has a psychological technique and insight into the nature and structure of the sense of rhythm, has in music itself abundant means for observing the child's capacity and, indeed, abundant situations which should enable him to analyze the talent for rhythm into its chief components in which he may be able to rate the various traits for practical purposes. In fact, he need not wait for music, but may analyze these powers as they are revealed in the spontaneous play of the child.

It is now clear that, for guidance in music, there are two fundamental factors in rhythmic perception. One is the vividness and the other is the precision. A person may have effusive rhythmic feeling in the perception of music and live himself into it most realistically and yet not have any capacity for precision. Likewise, a person may have fine capacity for precision in rhythmic perception and yet not have the vivid emotional experience of the rhythm. Between these extremes we have many types of rhythmic hearing, both qualitatively and quantitatively.

¹Measurements of this sort are explained in a forthcoming volume on "The Psychology of Musical Talent."

Although the sense of rhythm responds to training, there are very great individual differences in capacity for achievement. From the point of view of quantitative analysis, two factors must be borne in mind; first, that the relative presence or absence of one or more of the basic capacities for rhythm determines the permanent traits of the developed musical mind in rhythm; and, second, that the relative presence or absence of such capacities in childhood may be regarded as a fair index to achievement, or the ability to profit by rhythmic training.